



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,340	07/18/2003	Koji Sasaki	075834.00417	4814

33448 7590 03/04/2005

ROBERT J. DEPKE LEWIS T. STEADMAN
HOLLAND & KNIGHT LLC
131 SOUTH DEARBORN
30TH FLOOR
CHICAGO, IL 60603

EXAMINER

BUEKER, RICHARD R

ART UNIT	PAPER NUMBER
----------	--------------

1763

DATE MAILED: 03/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/622,340

Applicant(s)

SASAKI ET AL.

Examiner

Richard Bueker

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12-27-04.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 6-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claims 1 and 6-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claim 1, last line, the phrase " $-60^{\circ} \leq \theta < 0^{\circ}$, $0^{\circ} < \theta \leq 80^{\circ}$ " does not appear to have been in the specification as originally filed. Page 20, line 17 discloses a range of angles of "+80° to -60°". Clarification is respectfully requested. This is a new matter rejection.

Claims 1 and 6-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1 the phrase "an angle θ measured from a horizontal axis bisecting said chamber to the location in the chamber satisfies the expression $-60^{\circ} \leq \theta < 0^{\circ}$, $0^{\circ} < \theta \leq 80^{\circ}$ " is unclear, vague and indefinite. This phrase recites an angle measured between an axis and a location, which is not a properly defined angle. An angle is defined as "the figure formed by two lines diverging from a common point". The above quoted phrase does not define two lines, and it does not define a common point from which two lines diverge. Even if it were assumed that this phrase was referring to a second axis that intersected the first axis and "the location", it would still not define a single specific "common point" as required by the definition of "angle". Such a single common point, common to both axes, would be necessary in order to measure an angle in a meaningful way. It is noted that an axis is defined as 'a line', and thus can be considered of infinite length. If the common point is a variable, it

could be at any point on the recited "horizontal axis bisecting said chamber" and the recited angle is also a variable of any value. Therefore, the nature and scope of the recited angle is unclear and indefinite. Also, the recitation of a negative angle is unclear without including further information regarding how the angle is measured. It is noted that applicants' Fig. 12 depicts a negative angle as an angle below a horizontal axis. Figs. 11, 13A and 13B, however, each depict angles that extend below a horizontal axis, but are not labeled as negative angles.

Claims 1 and 10 are rejected under 35 U.S.C. 102(a) or (b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Jurgensen I (WO 01/61071). Jurgensen II (2003/0054099) is an English-language equivalent of Jurgensen I (WO 01/61071) and was cited of interest in the previous office action as an English translation of Jurgensen I, and the passages of Jurgensen referred to in this office action are to Jurgensen II (2003/0054099). Figs. 1 and 5 of Jurgensen each illustrate an organic film formation apparatus having a coating chamber, a substrate holder in the coating chamber for holding a substrate on which an organic coating is to be deposited, a vaporizer for organic source material and a source of carrier gas for transporting gas of the organic source material into the coating chamber. The location of the substrate extends a long distance in the horizontal direction inside the chamber. A horizontal axis bisecting the chamber of Fig. 1 or 5 of Jurgensen would be parallel to the planar surface of the substrate¹². The size of an angle θ measured from a horizontal bisecting axis to the location of the substrate will depend on where the angle's vertex is located. Applicants' claims do not specify where the vertex of angle θ is located and the location

Art Unit: 1763

of the angle's vertex is. Applicants' claims also do not specify what point of the substrate's location the angle is measured from. It can be seen from Jurgensen's Figs. 1 and 5 that a line can inherently be drawn that intersects a horizontal bisecting axis of the chamber and also intersects a point of the substrate location, such that an angle θ is formed between that line and the recited axis, such that the angle θ is within the range of angles recited in claim 1. It is noted also that Jurgensen teaches (paragraph 41) that the substrate to be coated can have a curved surface, and the substrate location would in that case inherently be at an angle to a bisecting horizontal axis. It is noted also that Jurgensen teaches (paragraph 19) the use of a mask on his substrate.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurgensen I (WO 01/61071) for the reasons stated above, and taken in view of DuBois (5,855,687) (see Figs. 1 and 2 and paragraph bridging cols. 5 and 6) and Forrest (5,554,220) (Fig. 5 and col. 8, line 13 to col. 9, line 20), who both teach that a more uniform coating can be achieved by rotating a substrate holder during a vapor deposition process. It would have been obvious to provide the apparatus of Jurgensen I with means to rotate the substrate holder in order to achieve a more uniform coating as taught by DuBois and Forrest.

Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurgensen I (WO 01/61071) taken in view of DuBois (5,855,687) and Forrest (5,554,220) for the reasons stated in the rejection of claims 7 and 8 above, and taken in further view of Miller (6,200,389) and/or Murakami (5,431,738). Murakami (see Figs. 5-7, for example) discloses a vapor coating apparatus having a substrate holder that

Art Unit: 1763

rotates the substrate and also slides the substrate. Murakami teaches that by providing the substrate with multiple modes of movement during a vapor coating process, a desirably more uniform coating can be formed. Also, Miller (see Fig. 17 and col. 11, line 1-62) teaches that a substrate holder can slide back and forth on rails while also rotating, to form a more uniform coating in a vapor coating apparatus. It would have been obvious to one skilled in the art to provide the substrate holder of Jurgensen I with sliding means alone or in addition to rotating means because Murakami and/or Miller teach that sliding the substrate would successfully improve coating uniformity in a vapor deposition apparatus.

Claims 1 and 10 are rejected under 35 U.S.C. 103(a) as obvious over Jurgensen I (WO 01/61071) taken in view of Okamura (JP 63-299323). Okamura (Fig. 1 and abstract) teaches that it is desirable to arrange a substrate in a vapor coating apparatus such that the film formation surface of said substrate is slanted relative to the vertical direction, so that undesirable suspended matter will be less likely to settle on the film formation surface. It would have been obvious to one skilled in the art to modify the apparatus of Jurgensen I by arranging the substrate holder and coating gas distribution manifold in the manner taught by Okamura I, for the desirable purpose of preventing particulate contamination from settling on Jurgensen's substrate surface. Such an arrangement would inherently include an angle θ as recited in claim 1.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurgensen I (WO 01/61071) in view of Okamura (JP 63-299323) for the reasons stated above, and taken in view of Kawata (5,445,677) and Forrest (5,554,220). It would have

Art Unit: 1763

been obvious to one skilled in the art to provide means for rotating a substrate holder that was held in the position illustrated by Okamura, because Kawata (Fig. 1) and Forrest teach that substrate rotation desirably improves the uniformity of a deposited coating.

Claims 6 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jurgensen I (WO 01/61071) taken in view of Okamura (JP 63-299323), Kawata (5,445,677) and Forrest (5,554,220) for the reasons stated in the rejection of claims 7 and 8 above, and taken in further view of Miller (6,200,389) and/or Murakami (5,431,738). It would have been obvious to one skilled in the art to provide means for rotating and sliding a substrate holder that was held in the position illustrated by Okamura, because Miller and Murakami teach that substrate rotation in combination with sliding the substrate holder desirably improves the uniformity of a deposited coating.

Claims 1, 7, 8 and 10 are rejected under 35 U.S.C. 102(a) or (b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Forrest (5,554,220). Figs. 2 and 5 of Forrest illustrate an organic film formation apparatus having a coating chamber, a substrate holder in the coating chamber for holding a substrate on which an organic coating is to be deposited, a vaporizer for organic source material and a source of carrier gas for transporting gas of the organic source material into the coating chamber. The location of the substrate extends a long distance in the horizontal direction inside the chamber. A horizontal axis bisecting the chamber of Fig. 2 (or Fig. 5) would be parallel to the planar surface of the substrate. The size of an angle θ

measured from the horizontal bisecting axis to the location of the substrate will depend on where the angle's vertex is located. Applicants' claims do not specify where the vertex of angle θ is located and the location of the angle's vertex is. Applicants' claims also do not specify what point of the substrate's location the angle is measured from. It can be seen from Forrest's Fig. 2 (and Fig. 5) that a line can inherently be drawn that intersects a horizontal bisecting axis and intersects a point of the substrate location, such that an angle θ is formed that is within the range of angles recited in claim 1.

Claims 1 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forrest (5,554,220) taken in view of Shtein II (J. App. Physics, vol. 89, no. 2, pages 1470-1476). Forrest (Fig. 2) discloses an organic film formation apparatus having a coating chamber, a substrate holder in the coating chamber for holding a substrate on which an organic coating is to be deposited, a vaporizer for organic source material and a source of carrier gas for transporting gas of the organic source material into the coating chamber. Shtein II discloses an analogous coating apparatus (see Fig. 2 of Shtein II), and Shtein II also teaches the use of a substrate holder that slides and rotates the substrate while the substrate is in a position with its planar surface held in a vertical position. It would have been obvious to one skilled in the art to modify the coating apparatus of Fig. 2 of Forrest by providing it with a substrate holder of the type shown in Fig. 2 of Shtein II, because Shtein II teaches that his substrate holder can successfully be used to deposit coatings with desirable uniformity. It is noted that in such an arrangement, a horizontal bisecting axis of the coating chamber would form an

Art Unit: 1763

angle θ with the top edge and bottom edge of the substrate, and most of the other portion of the substrate, that was within the range of angles recited in claim 1.

Claims 1 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Forrest (5,554,220) taken in view of Shtein II (J. App. Physics, vol. 89, no. 2, pages 1470-1476) and Parker (5,081,069). Parker (Figs. 2 and 5-7) also discloses a vapor coating apparatus which includes a substrate holder that can rotate the substrate and can hold the planar face of the substrate at an angle θ to a horizontal bisecting axis of the coating chamber that is within the range the range of angles recited in claim 1. Parker teaches that his substrate holder promotes coating uniformity, and in view of that teaching of Parker, it would have been obvious to modify the apparatus of Forrest and Shtein to use a substrate holder of the type taught by Parker.

Applicants have argued that none of the prior art cited teaches the critical range of substrate locations now claimed. As discussed above, however, the claim 1 limitation of a range of angles θ is written in indefinite and unclear terms, or at least in such a way as to read on the above cited prior art.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The dictionary definition of "slide" is cited of interest.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Bueker whose telephone number is (571) 272-1431. The examiner can normally be reached on 9 AM - 5:30 PM, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/622,340
Art Unit: 1763

Page 10

Richard Bueker
Richard Bueker
Primary Examiner
Art Unit 1763